Analytical Laboratory

13339 Hagers Ferry Road
Huntersville, NC 28078-7929
McGuire Nuclear Complex - MG03A2
Phone: 980-875-5245 Fax: 980-875-4349

Order Summary Report

Order Number: **J11110004**

Customer Name(s): Bill Kennedy, Melonie Martin, Wayne Chapman, Tom Johnson

Customer Address: 3195 Pine Hall Rd
Mailcode: Belews Steam Station
Belews Creek, NC 28012

Lab Contact: Jason C Perkins Phone: 980-875-5348

Report Authorized By: (Signature) Digitally signed by jay perkins DN: cn=jay perkins, o=Analytical Lab, ou, email=jay.perkins@duke-energy.com, c=US Date: 2011.11.22 14:28:55 -05'00' **Date:** 11/22/2011

Program Comments:

Please contact the Program Manager (Jason C Perkins) with any questions regarding this report.

Data Flags & Calculations:

Any analytical tests or individual analytes within a test flagged with a Qualifier indicate a deviation from the method quality system or quality control requirement. The qualifier description is found at the end of the Certificate of Analysis (sample results) under the qualifiers heading. All results are reported on a dry weight basis unless otherwise noted.

Data Package:

This data package includes analytical results that are applicable only to the samples described in this narrative. An estimation of the uncertainty of measurement for the results in the report is available upon request. This report shall not be reproduced, except in full, without the written consent of the Analytical Laboratory. Please contact the Analytical laboratory with any questions. The order of individual sections within this report is as follows:

Job Summary Report, Sample Identification, Technical Validation of Data Package, Analytical Laboratory Certificate of Analysis, Analytical Laboratory QC Reports, Sub-contracted Laboratory Results, Customer Specific Data Sheets, Reports & Documentation, Customer Database Entries, Test Case Narratives, Chain of Custody (COC)

Certification:

The Analytical Laboratory holds the following State Certifications : North Carolina (DENR) Certificate #248, South Carolina (DHEC) Laboratory ID # 99005. Contact the Analytical Laboratory for definitive information about the certification status of specific methods.

Sample ID's & Descriptions:

Sample ID	Plant/Station	Collection Date and Time	Collected By	Sample Description
2011023685	BELEWS	09-Nov-11 7:30 AM	W. B. WORKMAN	FGD Purge Eff
2011023686	BELEWS	09-Nov-11 7:35 AM	W. B. WORKMAN	EQ TANK EFF.
2011023687	BELEWS	09-Nov-11 7:40 AM	W. B. WORKMAN	BIOREACTOR 1 INF.
2011023688	BELEWS	09-Nov-11 7:45 AM	W. B. WORKMAN	BIOREACTOR 2 INF.
2011023689	BELEWS	09-Nov-11 7:50 AM	W. B. WORKMAN	BIOREACTOR 2 EFF.
2011023692	BELEWS	09-Nov-11 7:55 AM	W. B. WORKMAN	FILTER BLANK
2011023693	BELEWS	09-Nov-11 8:00 AM	W. B. WORKMAN	Trip Blank
2011023694	BELEWS	09-Nov-11 1:10 PM	DAVID MORRIS	BIOREACTOR 1 INF.
2011023695	BELEWS	09-Nov-11 1:10 PM	DAVID MORRIS	HG BLANK BIOREACTOR 1 INF.
2011023696	BELEWS	09-Nov-11 1:20 PM	DAVID MORRIS	BIOREACTOR 2 INF.
2011023697	BELEWS	09-Nov-11 1:20 PM	DAVID MORRIS	Hg Blk BioReactor 2 Inf
2011023698	BELEWS	09-Nov-11 1:15 PM	DAVID MORRIS	BIOREACTOR 2 EFF.
2011023699	BELEWS	09-Nov-11 1:15 PM	DAVID MORRIS	Hg Blk BioReactor 2 Eff

13 Total Samples

Technical Validation Review

Checklist:

COC and .pdf report are in agreement with sample totals and analyses (compliance programs and procedures).	☑ Yes	☐ No
All Results are less than the laboratory reporting limits.	☐ Yes	☑ No
All laboratory QA/QC requirements are acceptable.	☑ Yes	☐ No
The Vendor Laboratories have been qualified by the Analytical Laboratory	Yes	

Report Sections Included:

- ☑ Job Summary Report
- ☑ Sample Identification
- ☑ Technical Validation of Data Package
- ☑ Analytical Laboratory Certificate of Analysis
- ☐ Analytical Laboratory QC Report
- ☑ Sub-contracted Laboratory Results
- ☐ Customer Specific Data Sheets, Reports, & Documentation
- ☐ Customer Database Entries
- ☑ Chain of Custody
- ☑ Electronic Data Deliverable (EDD) Sent Separately

Reviewed By: DataBase Administrator Date: 11/22/2011

Certificate of Laboratory Analysis

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Order # J11110004

Site: FGD Purge Eff **Sample #: 2011023685**

Collection Date: 09-Nov-11 7:30 AM Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	Method	Analysis Date/Time	Analyst
INORGANIC IONS BY IC							
Bromide	**94**	mg/L		5	EPA 300.0	15-Nov-11 00:21	JAHERMA
MERCURY (COLD VAPOR) IN WATER							
Mercury (Hg)	**247**	ug/L		5	EPA 245.1	18-Nov-11 08:44	AGIBBS
TOTAL RECOVERABLE METALS BY ICP							
Boron (B)	**158**	mg/L		0.5	EPA 200.7	15-Nov-11 14:39	DJSULL1
DISSOLVED METALS BY ICP-MS							
Selenium (Se)	**267**	ug/L		10	EPA 200.8	14-Nov-11 11:47	KRICHAR
TOTAL RECOVERABLE METALS BY ICP-MS							
Arsenic (As)	**164**	ug/L		10	EPA 200.8	15-Nov-11 11:55	KRICHAR
Chromium (Cr)	**191**	ug/L		10	EPA 200.8	15-Nov-11 11:55	KRICHAR
Copper (Cu)	**106**	ug/L		10	EPA 200.8	15-Nov-11 11:55	KRICHAR
Nickel (Ni)	**172**	ug/L		10	EPA 200.8	15-Nov-11 11:55	KRICHAR
Selenium (Se)	**4220**	ug/L		10	EPA 200.8	15-Nov-11 11:55	KRICHAR
Silver (Ag)	**< 10**	ug/L		10	EPA 200.8	15-Nov-11 11:55	KRICHAR
Zinc (Zn)	**203**	ug/L		20	EPA 200.8	15-Nov-11 11:55	KRICHAR
SELENIUM SPECIATION							
Vendor Parameter	**Complete**				V_AS&C		
TOTAL DISSOLVED SOLIDS							
TDS	**17000**	mg/L		200	SM2540C	15-Nov-11 14:50	TJA7067

Site: EQ TANK EFF. **Sample #: 2011023686**

Collection Date: 09-Nov-11 7:35 AM Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	Method	Analysis Date/Time	Analyst
MERCURY (COLD VAPOR) IN WATER							
Mercury (Hg)	**173**	ug/L		2.5	EPA 245.1	18-Nov-11 08:46	AGIBBS
TOTAL RECOVERABLE METALS BY ICP							
Boron (B)	**156**	mg/L		0.5	EPA 200.7	15-Nov-11 14:43	DJSULL1
DISSOLVED METALS BY ICP-MS							
Selenium (Se)	**195**	ug/L		10	EPA 200.8	14-Nov-11 11:51	KRICHAR

Certificate of Laboratory Analysis

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Order # J11110004

Site: EQ TANK EFF. **Sample #: 2011023686**

Collection Date: 09-Nov-11 7:35 AM Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	Method	Analysis Date/Time	Analyst
TOTAL RECOVERABLE METALS BY ICP-MS							
Arsenic (As)	**137**	ug/L		10	EPA 200.8	15-Nov-11 11:58	KRICHAR
Chromium (Cr)	**155**	ug/L		10	EPA 200.8	15-Nov-11 11:58	KRICHAR
Copper (Cu)	**87.6**	ug/L		10	EPA 200.8	15-Nov-11 11:58	KRICHAR
Nickel (Ni)	**157**	ug/L		10	EPA 200.8	15-Nov-11 11:58	KRICHAR
Selenium (Se)	**3690**	ug/L		10	EPA 200.8	15-Nov-11 11:58	KRICHAR
Silver (Ag)	**< 10**	ug/L		10	EPA 200.8	15-Nov-11 11:58	KRICHAR
Zinc (Zn)	**177**	ug/L		20	EPA 200.8	15-Nov-11 11:58	KRICHAR

Site: BIOREACTOR 1 INF. **Sample #: 2011023687**

Collection Date: 09-Nov-11 7:40 AM Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	Method	Analysis Date/Time	Analyst
TOTAL RECOVERABLE METALS BY ICP							
Boron (B)	**151**	mg/L		0.5	EPA 200.7	15-Nov-11 14:47	DJSULL1
DISSOLVED METALS BY ICP-MS							
Selenium (Se)	**137**	ug/L		10	EPA 200.8	14-Nov-11 11:54	KRICHAR
TOTAL RECOVERABLE METALS BY ICP-MS							
Arsenic (As)	**< 10**	ug/L		10	EPA 200.8	15-Nov-11 12:01	KRICHAR
Chromium (Cr)	**< 10**	ug/L		10	EPA 200.8	15-Nov-11 12:01	KRICHAR
Copper (Cu)	**< 10**	ug/L		10	EPA 200.8	15-Nov-11 12:01	KRICHAR
Nickel (Ni)	**57.9**	ug/L		10	EPA 200.8	15-Nov-11 12:01	KRICHAR
Selenium (Se)	**130**	ug/L		10	EPA 200.8	15-Nov-11 12:01	KRICHAR
Silver (Ag)	**< 10**	ug/L		10	EPA 200.8	15-Nov-11 12:01	KRICHAR
Zinc (Zn)	**< 20**	ug/L		20	EPA 200.8	15-Nov-11 12:01	KRICHAR
SELENIUM SPECIATION							
Vendor Parameter	**Complete**				V_AS&C		

Site: BIOREACTOR 2 INF. **Sample #: 2011023688**

Collection Date: 09-Nov-11 7:45 AM Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	Method	Analysis Date/Time	Analyst
TOTAL RECOVERABLE METALS BY ICP							
Boron (B)	**153**	mg/L		0.5	EPA 200.7	15-Nov-11 14:51	DJSULL1

Certificate of Laboratory Analysis

Order # J11110004

Site: BIOREACTOR 2 INF. **Sample #: 2011023688**

Collection Date: 09-Nov-11 7:45 AM Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	Method	Analysis Date/Time	Analyst
TOTAL RECOVERABLE METALS BY ICP-MS							
Arsenic (As)	**< 10**	ug/L		10	EPA 200.8	15-Nov-11 12:05	KRICHAR
Chromium (Cr)	**< 10**	ug/L		10	EPA 200.8	15-Nov-11 12:05	KRICHAR
Copper (Cu)	**< 10**	ug/L		10	EPA 200.8	15-Nov-11 12:05	KRICHAR
Nickel (Ni)	**< 10**	ug/L		10	EPA 200.8	15-Nov-11 12:05	KRICHAR
Selenium (Se)	**14.6**	ug/L		10	EPA 200.8	15-Nov-11 12:05	KRICHAR
Silver (Ag)	**< 10**	ug/L		10	EPA 200.8	15-Nov-11 12:05	KRICHAR
Zinc (Zn)	**< 20**	ug/L		20	EPA 200.8	15-Nov-11 12:05	KRICHAR

Site: BIOREACTOR 2 EFF. **Sample #: 2011023689**

Collection Date: 09-Nov-11 7:50 AM Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	Method	Analysis Date/Time	Analyst
INORGANIC IONS BY IC							
Bromide	**88**	mg/L		5	EPA 300.0	15-Nov-11 00:37	JAHERMA
MERCURY (COLD VAPOR) IN WATER							
Mercury (Hg)	**< 1**	ug/L		1	EPA 245.1	18-Nov-11 09:03	AGIBBS
TOTAL RECOVERABLE METALS BY ICP							
Boron (B)	**166**	mg/L		0.5	EPA 200.7	15-Nov-11 14:55	DJSULL1
TOTAL RECOVERABLE METALS BY ICP-MS							
Arsenic (As)	**< 5**	ug/L		5	EPA 200.8	15-Nov-11 12:08	KRICHAR
Chromium (Cr)	**< 5**	ug/L		5	EPA 200.8	15-Nov-11 12:08	KRICHAR
Copper (Cu)	**< 5**	ug/L		5	EPA 200.8	15-Nov-11 12:08	KRICHAR
Nickel (Ni)	**< 5**	ug/L		5	EPA 200.8	15-Nov-11 12:08	KRICHAR
Selenium (Se)	**< 5**	ug/L		5	EPA 200.8	15-Nov-11 12:08	KRICHAR
Silver (Ag)	**< 5**	ug/L		5	EPA 200.8	15-Nov-11 12:08	KRICHAR
Zinc (Zn)	**< 10**	ug/L		10	EPA 200.8	15-Nov-11 12:08	KRICHAR
SELENIUM SPECIATION							
Vendor Parameter	**Complete**				V_AS&C		

Site: FILTER BLANK **Sample #: 2011023692**

Collection Date: 09-Nov-11 7:55 AM Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	Method	Analysis Date/Time	Analyst
DISSOLVED METALS BY ICP-MS							
Selenium (Se)	**1.10**	ug/L		1	EPA 200.8	14-Nov-11 11:31	KRICHAR

Certificate of Laboratory Analysis

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Order # J11110004

Site: Trip Blank — **Sample #: 2011023693**
Collection Date: 09-Nov-11 8:00 AM — Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	Method	Analysis Date/Time	Analyst
TOTAL RECOVERABLE METALS BY ICP							
Boron (B)	**< 0.05**	mg/L		0.05	EPA 200.7	15-Nov-11 14:23	DJSULL1
TOTAL RECOVERABLE METALS BY ICP-MS							
Arsenic (As)	**< 1**	ug/L		1	EPA 200.8	15-Nov-11 11:43	KRICHAR
Chromium (Cr)	**< 1**	ug/L		1	EPA 200.8	15-Nov-11 11:43	KRICHAR
Copper (Cu)	**< 1**	ug/L		1	EPA 200.8	15-Nov-11 11:43	KRICHAR
Nickel (Ni)	**< 1**	ug/L		1	EPA 200.8	15-Nov-11 11:43	KRICHAR
Selenium (Se)	**< 1**	ug/L		1	EPA 200.8	15-Nov-11 11:43	KRICHAR
Silver (Ag)	**< 1**	ug/L		1	EPA 200.8	15-Nov-11 11:43	KRICHAR
Zinc (Zn)	**< 2**	ug/L		2	EPA 200.8	15-Nov-11 11:43	KRICHAR
SELENIUM SPECIATION							
Vendor Parameter	**Complete**				V_AS&C		

Site: BIOREACTOR 1 INF. — **Sample #: 2011023694**
Collection Date: 09-Nov-11 1:10 PM — Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	Method	Analysis Date/Time	Analyst
MERCURY 1631							
Vendor Parameter	**Complete**				V_BRAND		

Site: HG BLANK BIOREACTOR 1 INF. — **Sample #: 2011023695**
Collection Date: 09-Nov-11 1:10 PM — Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	Method	Analysis Date/Time	Analyst
MERCURY 1631							
Vendor Parameter	**Complete**				V_BRAND		

Site: BIOREACTOR 2 INF. — **Sample #: 2011023696**
Collection Date: 09-Nov-11 1:20 PM — Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	Method	Analysis Date/Time	Analyst
MERCURY 1631							
Vendor Parameter	**Complete**				V_BRAND		

Certificate of Laboratory Analysis

Order # J11110004

Site: Hg Blk BioReactor 2 Inf — **Sample #: 2011023697**
Collection Date: 09-Nov-11 1:20 PM — Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	Method	Analysis Date/Time	Analyst
MERCURY 1631							
Vendor Parameter	**Complete**				V_BRAND		

Site: BIOREACTOR 2 EFF. — **Sample #: 2011023698**
Collection Date: 09-Nov-11 1:15 PM — Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	Method	Analysis Date/Time	Analyst
MERCURY 1631							
Vendor Parameter	**Complete**				V_BRAND		

Site: Hg Blk BioReactor 2 Eff — **Sample #: 2011023699**
Collection Date: 09-Nov-11 1:15 PM — Matrix: OTHER

Analyte	Result	Units	Qualifiers	RDL	Method	Analysis Date/Time	Analyst
MERCURY 1631							
Vendor Parameter	**Complete**				V_BRAND		

APPLIED SPECIATION AND CONSULTING, LLC

18804 Northcreek Parkway Bothell, WA, 98011
Tel: (425) 483-3300 Fax: (425) 483-9818
www.appliedspeciation.com

November 14, 2011

Jay Perkins
Duke Energy Analytical Laboratory
Mail Code MGO3A2 (Building 7405)
13339 Hagers Ferry Rd.
Huntersville, NC 28078
(704) 875-5245

Project: Belews – FGD WWTS Bi-Monthly Sampling) (LIMS # J11110004)

Dear Mr. Perkins,

Attached is the report associated with four (4) aqueous samples submitted for selenium speciation analysis on November 10, 2011. The samples were received in a sealed cooler at -0.3°C on November 11, 2011. Selenium speciation analysis was performed via ion chromatography inductively coupled plasma dynamic reaction cell mass spectrometry (IC-ICP-DRC-MS). Any issues associated with the analysis are addressed in the following report.

If you have any questions, please feel free to contact me at your convenience.

Sincerely,

Russell Gerads
Vice President
Applied Speciation and Consulting, LLC

Applied Speciation and Consulting, LLC

Report prepared for:

Jay Perkins
Duke Energy Analytical Laboratory
Mail Code MGO3A2 (Building 7405)
13339 Hagers Ferry Rd.
Huntersville, NC 28078

Project: Belews – FGD WWTS Bi-Monthly Sampling) (LIMS # J11110004)

November 14, 2011

1. Sample Reception

Four (4) aqueous samples in 125mL HDPE bottles (provided by Applied Speciation and Consulting) were submitted for selenium speciation analysis on November 10, 2011. The samples were received on November 11, 2011 in a sealed container at -0.3°C.

The samples were received in a laminar flow clean hood, void of trace metals contamination and ultra-violet radiation, and designated a discrete sample identifier. An aliquot of each sample was filtered (0.45µm) and each filtrate was stored in a secure, monitored cryofreezer (maintained at a temperature of -80^{o}C) until selenium speciation analysis could be performed via ion chromatography inductively coupled plasma dynamic reaction cell mass spectrometry (IC-ICP-DRC-MS).

2. Sample Preparation

All sample preparation is performed in laminar flow clean hoods known to be free from trace metals contamination. All applied water for dilutions and sample preservatives are monitored for contamination to account for any biases associated with the sample results.

Selenium Speciation Analysis by IC-ICP-DRC-MS Prior to analysis, an aliquot of each sample was filtered with a syringe filter (0.45µm) and injected directly into a sealed autosampler vial. No further sample preparation was performed as any chemical alteration of a sample may shift the equilibrium of the system, resulting in changes in speciation ratios.

3. Sample Analysis

All sample analysis is preceded by a minimum of a five-point calibration curve spanning the entire concentration range of interest. Calibration curves are performed at the beginning of

each analytical day. All calibration curves, associated with each species of interest, are standardized by linear regression resulting in a response factor. All sample results are **instrument blank corrected** to account for any operational biases associated with the analytical platform.

Prior to sample analysis, all calibration curves are verified using second source standards which are identified as initial calibration verification standards (ICV).

Ongoing instrument performance is identified by the analysis of continuing calibration verification standards (CCV) and continuing calibration blanks (CCB) at a minimal interval of every ten analytical runs.

Selenium Speciation Analysis by IC-ICP-DRC-MS Each sample for selenium speciation analysis was analyzed by ion chromatography inductively coupled plasma dynamic reaction cell mass spectrometry (IC-ICP-DRC-MS) on November 11, 2011. An aliquot of each sample is injected onto an anion exchange column and mobilized by a basic (pH > 7) gradient. The eluting selenium species are then introduced into a radio frequency (RF) plasma where energy-transfer processes cause desolvation, atomization, and ionization. The ions are extracted from the plasma through a differentially-pumped vacuum interface and travel through a pressurized chamber (DRC) containing a specific reactive gas which preferentially reacts with interfering ions of the same target mass to charge ratios (m/z). A solid-state detector detects ions transmitted through the mass analyzer and the resulting current is processed by a data handling system.

Retention times for each eluting species are compared to known standards for species identification.

4. Analytical Issues

The overall analyses went well and no significant analytical issues were encountered. All quality control parameters associated with this sample were within acceptance limits.

The estimated method detection limits (eMDLs) for selenite, selenate, and selenocyanate are generated from replicate analyses of the lowest standard in the calibration curve. Not all selenium species are present in preparation blanks; therefore, eMDL calculations based on preparation blanks are artificially biased low.

The eMDL for methylseleninic acid and selenomethionine is calculated from the average eMDL of selenite, selenate, and selenocyanate. The calibration does not contain methylseleninic acid or selenomethionine due to impurities in these standards which would bias the results for other selenium species.

All selenium speciation results have been corrected for instrument drift in accordance with the continuing calibration verification standards. All quality control parameters were within acceptance limits signifying that the applied correction was appropriate.

If you have any questions or concerns regarding this report, please feel free to contact me.

Sincerely,

Russell Gerads
Vice President
Applied Speciation and Consulting, LLC

Selenium Speciation Results for Duke Energy
Project Name: Belews - FGD WWTS Bi-Monthly Sampling
Contact: Jay Perkins
LIMS #J11110004

Date: November 14, 2011
Report Generated by: Russell Gerads
Applied Speciation and Consulting, LLC

Sample Results

Sample ID	Se(IV)	Se(VI)	SeCN	MeSe(IV)	SeMe	Unknown Se Species (n)
FGD Purge Eff	176	68.9	ND (<4.3)	ND (<5.1)	ND (<5.1)	4.8 (1)
BioReactor 1 Inf	46.5	63.9	ND (<1.1)	4.7	ND (<1.3)	0 (0)
BioRector 2 Eff	ND (<1.2)	ND (<1.5)	ND (<1.1)	ND (<1.3)	ND (<1.3)	0 (0)
Metals Trip Blk	ND (<0.24)	ND (<0.30)	ND (<0.22)	ND (<0.25)	ND (<0.25)	0 (0)

All results reflect the applied dilution and are reported in µg/L
ND = Not detected at the applied dilution
SeCN = Selenocyanate
MeSe(IV) = Methylseleninic acid
SeMe = Selenomethionine
Unknown Se Species = Total concentration of all unknown Se species observed by IC-ICP-MS
n = number of unknown Se species observed

Selenium Speciation Results for Duke Energy
Project Name: Belews - FGD WWTS Bi-Monthly Sampling
Contact: Jay Perkins
LIMS #J11110004

Date: November 14, 2011
Report Generated by: Russell Gerads
Applied Speciation and Consulting, LLC

Quality Control Summary - Preparation Blank Summary

Analyte (µg/L)	PBW1	PBW2	PBW3	PBW4	Mean	StdDev	eMDL*	eMDL 10x	eMDL 50x	eMDL 200x
Se(IV)	0.000	0.000	0.000	0.000	0.000	0.000	0.024	0.24	1.2	4.8
Se(VI)	0.000	0.000	0.000	0.000	0.000	0.000	0.030	0.30	1.5	6.1
SeCN	0.000	0.000	0.000	0.000	0.000	0.000	0.022	0.22	1.1	4.3
MeSe(IV)	0.000	0.000	0.000	0.000	0.000	0.000	0.025	0.25	1.3	5.1
SeMe	0.000	0.000	0.000	0.000	0.000	0.000	0.025	0.25	1.3	5.1

eMDL = Estimated Method Detection Limit
*Please see narrative regarding eMDL calculations

Quality Control Summary - Certified Reference Materials

Analyte (µg/L)	CRM	True Value	Result	Recovery
Se(IV)	LCS	9.57	9.76	102.0
Se(VI)	LCS	9.48	9.55	100.8
SeCN	LCS	8.92	9.43	105.8
MeSe(IV)	LCS	6.47	6.38	98.6
SeMe	LCS	9.32	9.64	103.5

Selenium Speciation Results for Duke Energy
Project Name: Belews - FGD WWTS Bi-Monthly Sampling
Contact: Jay Perkins
LIMS #J11110004

Date: November 14, 2011
Report Generated by: Russell Gerads
Applied Speciation and Consulting, LLC

Quality Control Summary - Matrix Duplicates

Analyte (µg/L)	Sample ID	Rep 1	Rep 2	Mean	RPD
Se(IV)	FGD Purge Eff	176.2	166.6	171.4	5.6
Se(VI)	FGD Purge Eff	68.9	71.0	70.0	3.1
SeCN	FGD Purge Eff	ND (<4.3)	ND (<4.3)	NC	NC
MeSe(IV)	FGD Purge Eff	ND (<5.1)	ND (<5.1)	NC	NC
SeMe	FGD Purge Eff	ND (<5.1)	ND (<5.1)	NC	NC

ND = Not detected at the applied dilution
NC = Value was not calculated due to one or more concentrations below the eMDL

Quality Control Summary - Matrix Spike/ Matrix Spike Duplicate

Analyte (µg/L)	Sample ID	Spike Conc	MS Result	Recovery	Spike Conc	MSD Result	Recovery	RPD
Se(IV)	FGD Purge Eff	1112	1325	103.7	1112	1358	106.7	2.5
Se(VI)	FGD Purge Eff	1009	1093	101.4	1009	1091	101.1	0.2
SeCN	FGD Purge Eff	915.0	868.8	95.0	915.0	878.4	96.0	1.1

CHAIN OF CUSTODY RECORD

Duke Energy

Duke Energy Analytical Laboratory
Mail Code MGO3A2 (Building 7405)
13339 Hagers Ferry Rd
Huntersville, N. C. 28078
(704) 875-5245
Fax: (704) 875-4349

Analytical Laboratory Use Only

ORDER# 11110004 | MATRIX: OTHER | Samples Originating From: NC / SC

Logged By: Cw | Date & Time: 11/10/11 0839

SAMPLE PROGRAM: Ground Water ___ NPDES ___ Drinking Water ___ UST ___ RCRA Waste ___

Cooler Temp (C)

[19]Page 1 of 2

DISTRIBUTION
ORIGINAL to LAB,
COPY to CLIENT

Customer must Complete

1)Project Name: Belews - FGD WWTS Bi-Monthly Sampling)		2)Phone No:
2) Client: Bill Kennedy, Melonie Martin, Wayne Chapman, Tom Johnson **		4)Fax No:
5)Business Unit:	6)Process:	Mail Code:
8)Oper. Unit:	9)Res. Type:	10)Reso. Center:

AS&C
PO#133241

MR#

[18]Preserv.:1=HCL 2=H_2SO_4 3=HNO_3 4=Ice 5=None: 4 | 3,4 | 4 | 3,4 | 4

Customer to complete all appropriate non-shaded areas.

Sampling conducted: 2nd and 4th Wednesday

[16]Analyses Required

LAB USE ONLY [11]Lab ID	Se Speciation Bottle ID	[13]Sample Description or ID	Date	Time	Signature	[17]Comp.	[18]Grab	TDS	Hg - 245.1	Br (Dionex)	Metals*	Se, soluble (no dig.)	Se, speciation - vendor to AS&C (Important to place filled bottle back into both baggies)
20110236[illegible]		FGD Purge Eff	11/9/11	7:30	W. Workman			1	1	1	1	1	1
86		EQ Tank Eff.	11/9/11	7:35					1		1	1	
87		BioReactor 1 Inf	11/9/11	7:40							1	1	1
88		BioReactor 2 Inf	11/9/11	7:45							1		
89		BioReactor 2 Eff	11/9/11	7:50					1	1	1		1
92		Filter Blk	11/9/11	7:55								1	
93		Metals Trip Blk	11/9/11	8:00							1		1

Filtering of the Se is performed in the field please provide a filter blank too.

Customer to complete appropriate columns to right.

Customer to sign & date below - fill out from left to right.

1) Relinquished By: W Workman	Date/Time: 11/9/11 13:00 hrs.	2) Accepted By: [signature]	Date/Time: 11-9-11 13:00
3) Relinquished By: [signature]	Date/Time: 11-9-11 0830	4) Accepted By: [signature]	Date/Time: 11/9/11 1550
5) Relinquished By: [signature]	Date/Time: 11/10/11 1300	6) Accepted By: [signature]	Date/Time: 11/11/11 1020
7) Relinquished By:	Date/Time:	8) Accepted By:	Date/Time:
9) Seal Locked By: [signature]	Date/Time: 11/10/11 1300	10) Seal/Lock Opened By: [signature]	Date/Time: 11/11/11 1020
11) Seal Locked By:	Date/Time:	12) Seal/Lock Opened By:	Date/Time: Temp: -0.5°C

Comments:

* B by ICP As, Cr, Cu, Ni, Se, Ag, Zn by IMS Digestions = TRM thomas.d.johnson@siemens.com

Customer, IMPORTANT! Please indicate desired turnaround.

[22]Requested Turnaround

14 Days _____

*7 Days _____

*48 Hr _____

*Other _____

* Add. Cost Will Apply

11-17-11

November 21, 2011

Duke Energy
ATTN: Jay Perkins
Scientific Support-Laboratory
13339 Hagers Ferry Road
Huntersville NC 28078
jcperkins@duke-energy.com
labcustomer@duke-energy.com

RE: Project DUK-HV1101 Client Project: J11110004

Dear Mr. Perkins,

On November 11, 2011, Brooks Rand Labs (BRL) received three (3) wastewater samples and three (3) corresponding field blanks. Samples were logged-in for total mercury (Hg) analysis. All samples were received, prepared, analyzed, and stored according to BRL SOPs and EPA methodology.

The results were blank-corrected as described in the calculations section of the applicable SOP(s) and may be evaluated using adjusted reporting limits to account for sample aliquot size. Please refer to the *Sample Results* page for sample-specific detection limits and other details.

BRL, an accredited laboratory, certifies the reported results of all analyses for which BRL is NELAP accredited meet all NELAP requirements. For more details, see the *Report Information* page of the report.

Please feel free to contact me if you have any questions regarding this report.

Sincerely,

Tiffany Stilwater
Project Manager
tiffany@brooksrand.com

Project ID: DUK-HV1101
PM: Tiffany Stilwater

Client PM: Jay Perkins
Client PO: 141391

Report Information

Laboratory Accreditation

BRL is accredited by the *National Environmental Laboratory Accreditation Program* (NELAP) through the State of Florida Department of Health, Bureau of Laboratories (E87982) and is certified to perform many environmental analyses. BRL is also certified by many other states to perform environmental analyses. For a current list of our accreditations /certifications, please visit our website at <http://www.brooksrand.com/default.asp?contentID=586>. Results reported relate only to the samples listed in the report.

Field Quality Control Samples

Please be notified that certain EPA methods require the collection of field quality control samples of an appropriate type and frequency; failure to do so is considered a deviation from some methods and for compliance purposes should only be done with the approval of regulatory authorities. Please see the specific EPA methods for details regarding required field quality control samples.

Common Abbreviations

BLK	method blank	**MS**	matrix spike
BRL	Brooks Rand Labs	**MSD**	matrix spike duplicate
BS	laboratory fortified blank	**ND**	non-detect
CAL	calibration standard	**NR**	non-reportable
CCV	continuing calibration verification	**PS**	post preparation spike
COC	chain of custody record	**REC**	percent recovery
CRM	certified reference material	**RPD**	relative percent difference
D	dissolved fraction	**RSD**	relative standard deviation
DUP	duplicate	**SCV**	secondary calibration verification
ICV	initial calibration verification	**SOP**	standard operating procedure
MDL	method detection limit	**SRM**	standard reference material
MRL	method reporting limit	**T**	total recoverable fraction

Definition of Data Qualifiers

(Effective 9/23/09)

B Detected by the instrument, the result is > the MDL but ≤ the MRL. Result is reported and considered an estimate.
E An estimated value due to the presence of interferences. A full explanation is presented in the narrative.
H Holding time and/or preservation requirements not met. Result is estimated.
J Estimated value. A full explanation is presented in the narrative.
J-M Duplicate precision (RPD) for associated QC sample was not within acceptance criteria. Result is estimated.
J-N Spike recovery for associated QC sample was not within acceptance criteria. Result is estimated.
M Duplicate precision (RPD) was not within acceptance criteria. Result is estimated.
N Spike recovery was not within acceptance criteria. Result is estimated.
R Rejected, unusable value. A full explanation is presented in the narrative.
U Result is ≤ the MDL or client requested reporting limit (CRRL). Result reported as the MDL or CRRL.
X Result is not BLK-corrected and is within 10x the absolute value of the highest detectable BLK in the batch. Result is estimated.

These qualifiers are based on those previously utilized by Brooks Rand, Ltd., those found in the EPA SOW ILM03.0, Exhibit B, Section III, pg. B-18, and the USEPA Laboratory Data Validation Functional Guidelines for Evaluating Inorganic Analyses; USEPA; July 2002. These supersede all previous qualifiers ever employed by BRL.

Project ID: DUK-HV1101
PM: Tiffany Stilwater

Client PM: Jay Perkins
Client PO: 141391

Sample Information

Sample	Lab ID	Report Matrix	Type	Sampled	Received
BioReactor 1 Inf	1146034-01	FGD Wastewater	Sample	11/09/2011	11/11/2011
Hg Blk BioReactor 1 Inf	1146034-02	DIW	Field Blank	11/09/2011	11/11/2011
BioReactor 2 Inf	1146034-03	FGD Wastewater	QC Sample	11/09/2011	11/11/2011
Hg Blk BioReactor 2 Inf	1146034-04	DIW	Field Blank	11/09/2011	11/11/2011
BioReactor 2 Eff	1146034-05	FGD Wastewater	QC Sample	11/09/2011	11/11/2011
Hg Blk BioReactor 2 Eff	1146034-06	DIW	Field Blank	11/09/2011	11/11/2011

Batch Summary

Analyte	Lab Matrix	Method	Prepared	Analyzed	Batch	Sequence
Hg	Water	EPA 1631	11/17/2011	11/18/2011	B111855	1100817

Project ID: DUK-HV1101
PM: Tiffany Stilwater

Client PM: Jay Perkins
Client PO: 141391

Sample Results

Sample	Analyte	Report Matrix	Fraction	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
BioReactor 1 Inf										
1146034-01	Hg	FGD Wastewater	T	158		1.52	4.04	ng/L	B111855	1100817
BioReactor 2 Eff										
1146034-05	Hg	FGD Wastewater	T	86.8		1.52	4.04	ng/L	B111855	1100817
BioReactor 2 Inf										
1146034-03	Hg	FGD Wastewater	T	152		1.52	4.04	ng/L	B111855	1100817
Hg Blk BioReactor 1 Inf										
1146034-02	Hg	DIW	T	0.15	U	0.15	0.40	ng/L	B111855	1100817
Hg Blk BioReactor 2 Eff										
1146034-06	Hg	DIW	T	0.15	U	0.15	0.40	ng/L	B111855	1100817
Hg Blk BioReactor 2 Inf										
1146034-04	Hg	DIW	T	0.15	U	0.15	0.41	ng/L	B111855	1100817

Project ID: DUK-HV1101
PM: Tiffany Stilwater

Client PM: Jay Perkins
Client PO: 141391

Accuracy & Precision Summary

Batch: B111855
Lab Matrix: Water
Method: EPA 1631

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B111855-SRM1	**Certified Reference Material (1145032, NIST 1641d 1000x dilution)**						
	Hg		15.68	15.46	ng/L	99% 85-115	
B111855-MS4	**Matrix Spike (1146034-03)**						
	Hg	152.2	606.1	879.9	ng/L	120% 71-125	
B111855-MSD4	**Matrix Spike Duplicate (1146034-03)**						
	Hg	152.2	606.1	846.4	ng/L	115% 71-125	4% 24
B111855-MS3	**Matrix Spike (1146034-05)**						
	Hg	86.76	404.0	518.9	ng/L	107% 71-125	
B111855-MSD3	**Matrix Spike Duplicate (1146034-05)**						
	Hg	86.76	404.0	525.5	ng/L	109% 71-125	1% 24

Project ID: DUK-HV1101
PM: Tiffany Stilwater

Client PM: Jay Perkins
Client PO: 141391

Method Blanks & Reporting Limits

Batch: B111855
Matrix: Water
Method: EPA 1631
Analyte: Hg

Sample	Result	Units
B111855-BLK1	0.09	ng/L
B111855-BLK2	0.05	ng/L
B111855-BLK3	0.09	ng/L
B111855-BLK4	0.07	ng/L

Average: 0.08 **Standard Deviation:** 0.02 **MDL:** 0.15
Limit: 0.50 **Limit:** 0.10 **MRL:** 0.40

Project ID: DUK-HV1101
PM: Tiffany Stilwater

Client PM: Jay Perkins
Client PO: 141391

Instrument Calibration

Sequence: 1100817
Instrument: THG-10
Date: 11/18/2011
Analyte: Hg

Total Mercury and Mercury Speciation by CVAFS
Method: EPA 1631

Lab ID	True Value	Result	Units	REC & Limits	
1100817-IBL1		4.33	pg of Hg		
1100817-IBL2		6.20	pg of Hg		
1100817-IBL3		5.46	pg of Hg		
1100817-IBL4		5.40	pg of Hg		
1100817-CAL1	25.00	25.61	pg of Hg	102%	
1100817-CAL2	100.0	103.0	pg of Hg	103%	
1100817-CAL3	500.0	477.3	pg of Hg	95%	
1100817-CAL4	2500	2539	pg of Hg	102%	
1100817-CAL5	10000	9801	pg of Hg	98%	
1100817-ICV1	1568	1546	pg of Hg	99%	85-115
1100817-CCB1		8.48	pg of Hg		
1100817-CCV1	500.0	493.6	pg of Hg	99%	77-123
1100817-CCV2	500.0	552.6	pg of Hg	111%	77-123
1100817-CCV3	500.0	505.6	pg of Hg	101%	77-123
1100817-CCV4	500.0	445.5	pg of Hg	89%	77-123
1100817-CCV5	500.0	524.3	pg of Hg	105%	77-123

Project ID: DUK-HV1101
PM: Tiffany Stilwater

Client PM: Jay Perkins
Client PO: 141391

Sample Containers

Lab ID: 1146034-01
Sample: BioReactor 1 Inf
Report Matrix: FGD Wastewater
Sample Type: Sample
Collected: 11/09/2011
Received: 11/11/2011

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Bottle FLPE Hg-T	250mL	71470160 10	none	n/a		Cardboard Box

Lab ID: 1146034-02
Sample: Hg Blk BioReactor 1 Inf
Report Matrix: DIW
Sample Type: Field Blank
Collected: 11/09/2011
Received: 11/11/2011

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Bottle FLPE Hg-T	250mL	71470160 10	none	n/a		Cardboard Box

Lab ID: 1146034-03
Sample: BioReactor 2 Inf
Report Matrix: FGD Wastewater
Sample Type: QC Sample
Collected: 11/09/2011
Received: 11/11/2011

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Bottle FLPE Hg-T	250mL	71470160 10	none	n/a		Cardboard Box

Lab ID: 1146034-04
Sample: Hg Blk BioReactor 2 Inf
Report Matrix: DIW
Sample Type: Field Blank
Collected: 11/09/2011
Received: 11/11/2011

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Bottle FLPE Hg-T	250mL	71470160 10	none	n/a		Cardboard Box

Lab ID: 1146034-05
Sample: BioReactor 2 Eff
Report Matrix: FGD Wastewater
Sample Type: QC Sample
Collected: 11/09/2011
Received: 11/11/2011

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Bottle FLPE Hg-T	500mL	71490150 70	none	n/a		Cardboard Box

Lab ID: 1146034-06
Sample: Hg Blk BioReactor 2 Eff
Report Matrix: DIW
Sample Type: Field Blank
Collected: 11/09/2011
Received: 11/11/2011

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Bottle FLPE Hg-T	250mL	71470160 10	none	n/a		Cardboard Box

Project ID: DUK-HV1101
PM: Tiffany Stilwater

Client PM: Jay Perkins
Client PO: 141391

Shipping Containers

Cardboard Box

Received: November 11, 2011 9:00
Tracking No: 4726 7966 5796 via FedEx
Coolant Type: None
Temperature: ambient

Description: Cardboard Box
Damaged in transit? No
Returned to client? No

Custody seals present? No
Custody seals intact? No
COC present? Yes

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST FORM

1146034

Duke Energy

Duke Energy Analytical Laboratory
Mail Code MGO3A2 (Building 7405)
13339 Hagers Ferry Rd
Huntersville, N. C. 28078
(704) 875-5245
Fax: (704) 875-4349

Analytical Laboratory Use Only

ORDER # J1110004 | Sample Class OTHER | Samples Originating From NC ✓ SC ___

Logged By cam | Date & Time 11/10/11 0839

SAMPLE PROGRAM: Ground Water ___ NPDES ___ Drinking Water ___ UST ___ RCRA Waste ___

Cooler Temp (C)

[19]Page 2 of 2
DISTRIBUTION
ORIGINAL to LAB,
COPY to CLIENT

Page 26 of 29
Customer must Complete

1)Project Name: Belews - FGD WWTS (2011, Bi-Weekly Sampling)		2)Phone No:
2) Client: Bill Kennedy, Melonie Martin, Wayne Chapman, Tom Johnson *		4)Fax No:
5)Business Unit:	6)Process:	Mail Code:
8)Oper. Unit:	9)Res. Type:	10)Reso. Center:

Brooks Rand
PO#141391

[18]Preserv.: 1=HCL 2=H_2SO_4 3=HNO_3 4=Ice 5=None

MR #

Customer to complete all appropriate non-shaded areas.

Customer to complete appropriate columns to right

LAB USE ONLY [11]Lab ID	Se Speciation Bottle ID	[13]Sample Description or ID	Sampling conducted: 2nd Wednesday each month Date	Time	Signature	[17]Comp.	[18]Grab	[16]Analyses Required: Hg 1631 (sample 2nd week only)
								5
2011023694		BioReactor 1 Inf	11-9-11	1320	Dave Mori		X	1
95		Hg Blk BioReactor 1 Inf		↓				1
96		BioReactor 2 Inf		1320				1
97		Hg Blk BioReactor 2 Inf		↓				1
98		BioReactor 2 Eff		1325				1
99		Hg Blk BioReactor 2 Eff		↓				1

Use the Bioreactor 2 Inf or EFF sample as the MS/MSD

Customer to sign & date below - fill out from left to right.

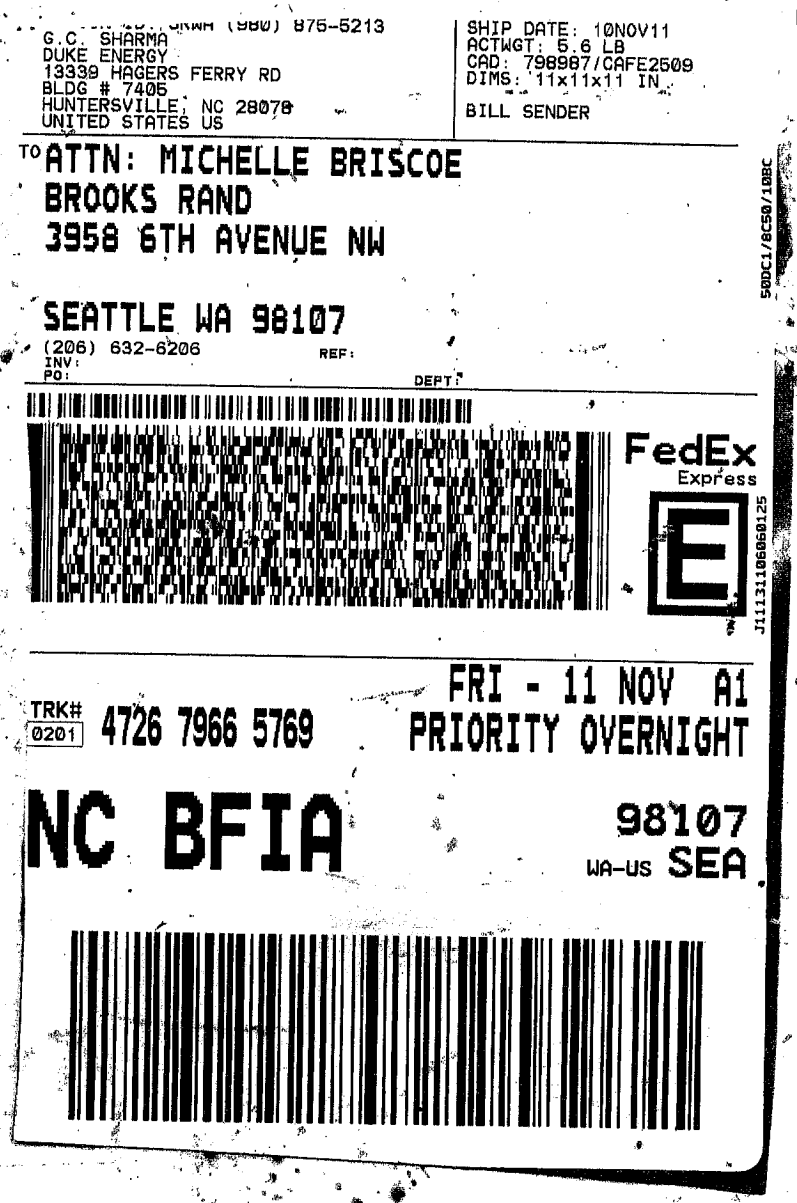
1) Relinquished By: Dave Mori	Date/Time: 11-9-11 1552	2) Accepted By: R. Davis	Date/Time: 11/9/11 1558
3) Relinquished By: R. Davis	Date/Time: 11/10/11 1300	4) Accepted By: Tyler Banks	Date/Time: 11/11/11 0900
5)Relinquished By:	Date/Time:	6)Accepted By:	Date/Time:
7)Relinquished By:	Date/Time:	8)Accepted By:	Date/Time:
9)Seal/Locked By: R. Davis	Date/Time: 11/10/11 1300	10) Seal/Lock Opened By:	Date/Time:
11)Seal/Locked By:	Date/Time:	12)Seal/Lock Opened By:	Date/Time:

Customer, IMPORTANT! Please indicate desired turnaround.

[22]Requested Turnaround
14 Days ___
*7 Days ___
*48 Hr ___
*Other ___
* Add. Cost Will Apply

Comments
* Metals=As, Ag, B, Cu, Cr, Ni, Se, Zn *thomas.d.johnson@siemens.com

11-17-11



G.C. SHARMA (980) 875-5213
DUKE ENERGY
13339 HAGERS FERRY RD
BLDG # 7405
HUNTERSVILLE, NC 28078
UNITED STATES US

SHIP DATE: 10NOV11
ACTWGT: 5.6 LB
CAD: 798987/CAFE2509
DIMS: 11x11x11 IN
BILL SENDER

TO ATTN: MICHELLE BRISCOE
BROOKS RAND
3958 6TH AVENUE NW

SEATTLE WA 98107
(206) 632-6206
INV:
PO:
REF:
DEPT:

FedEx Express

J11131106050125

TRK# 0201 4726 7966 5769

FRI - 11 NOV A1
PRIORITY OVERNIGHT

NC BFIA

98107
WA-US SEA

Bioreactor 2. Eff
500mL

7149015070

7149016010

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST FORM

Duke Energy Analytical Laboratory
Mail Code MGO3A2 (Building 7405)
13339 Hagers Ferry Rd
Huntersville, N. C. 28078
(704) 875-5245
Fax: (704) 875-4349

Page 1 of 2
DISTRIBUTION
ORIGINAL to LAB,
COPY to CLIENT

Analytical Laboratory Use Only

ORDER# 11110004 | MATRIX: OTHER | Samples Originating From NC ✓ SC ___
Logged By Gw | Date & Time 11/10/11 0839
SAMPLE PROGRAM: Water ___ Ground ___ NPDES ___ Drinking Water ___ UST ___ RCRA Waste ___
Cooler Temp (C)

AS&C
PO#133241

Customer must Complete

1) Project Name: Belews - FGD WWTS Bi-Monthly Sampling) | 2) Phone No:
2) Client: Bill Kennedy, Melonie Martin, Wayne Chapman, Tom Johnson ** | 4) Fax No:
5) Business Unit: | 6) Process: | Mail Code:
8) Oper. Unit: | 9) Res. Type: | 10) Reso. Center:

MR #

Customer to complete all appropriate non-shaded areas.

Sampling conducted: 2nd and 4th Wednesday

Customer to complete appropriate columns to right

LAB USE ONLY 11 Lab ID	Se Speciation Bottle ID	13 Sample Description or ID	Date	Time	Signature	17 Comp.	18 Grab	TDS	Hg - 245.1	Br (Dionex)	Metals*	Se, soluble (no dig.)	Se, speciation - vendor to AS&C (Important to place filled bottle back into both baggies)
		15 Preserv.: 1=HCl 2=H_2SO_4 3=HNO_3 4=Ice 5=None						4	3,4		4	3,4	4
20110236 85		FGD Purge Eff	11/9/11	7:30	W. Workman			1	1	1	1	1	1
86		EQ Tank Eff.	11/9/11	7:35					1		1	1	
87		BioReactor 1 Inf	11/9/11	7:40							1	1	1
88		BioReactor 2 Inf	11/9/11	7:45							1		
89		BioReactor 2 Eff	11/9/11	7:50					1	1	1		1
92		Filter Blk	11/9/11	7:55								1	
93		Metals Trip Blk	11/9/11	8:00							1		1

Filtering of the Se is performed in the field please provide a filter blank too.

Customer to sign & date below - fill out from left to right.

1) Relinquished By: W. Workman	Date/Time: 11/9/11 13:00 hrs.	2) Accepted By: Dan Mori	Date/Time: 11-9-11 1330
3) Relinquished By: Dan Mori	Date/Time: 11-9-11 0550	4) Accepted By: R. Davis	Date/Time: 11/9/11 1550
5) Relinquished By: R. Davis	Date/Time: 11/10/11 1300	6) Accepted By:	Date/Time:
7) Relinquished By:	Date/Time:	8) Accepted By:	Date/Time:
9) Seal/Locked By: R. Davis	Date/Time: 11/10/11 1300	10) Seal/Lock Opened By:	Date/Time:
11) Seal/Locked By:	Date/Time:	12) Seal/Lock Opened By:	Date/Time:

Comments: * B by ICP As, Cr, Cu, Ni, Se, Ag, Zn by IMS Digestions = TRM thomas.d.johnson@siemens.com

Customer, IMPORTANT! Please indicate desired turnaround.

22 Requested Turnaround
14 Days ___
*7 Days ___
*48 Hr ___
*Other ___
* Add. Cost Will Apply
11-17-11

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST FORM

Duke Energy Analytical Laboratory
Mail Code MGO3A2 (Building 7405)
13339 Hagers Ferry Rd
Huntersville, N. C. 28078
(704) 875-5245
Fax: (704) 875-4349

Analytical Laboratory Use Only

ORDER # 11110004 | Sample Class OTHER | Samples Originating From NC ✓ SC ___

Logged By Ann | Date & Time 11/10/11 0839

SAMPLE PROGRAM: Water ___ Ground ___ NPDES ___ Drinking Water ___ UST ___ RCRA Waste ___

[19]Page 2 of 2
DISTRIBUTION
ORIGINAL to LAB,
COPY to CLIENT

Brooks Rand
PO#141391

Cooler Temp (C)

[15]Preserv.: 1=HCL, 2=H_2SO_4, 3=HNO_3, 4=Ice, 5=None

Customer must Complete

1)Project Name	Belews - FGD WWTS (2011, Bi-Weekly Sampling)	2)Phone No:	
2) Client:	Bill Kennedy, Melonie Martin, Wayne Chapman, Tom Johnson *	4)Fax No:	
5)Business Unit:	6)Process:	Mail Code:	
8)Oper. Unit:	9)Res. Type:	10)Reso. Center:	

MR #

Customer to complete all appropriate non-shaded areas.

[16]Analyses Required

Sampling conducted: 2nd Wednesday each month

LAB USE ONLY [11]Lab ID	Se Speciation Bottle ID	[13]Sample Description or ID	Date	Time	Signature	[17]Comp.	[18]Grab	Hg 1631 (sample 2nd week only)
2011023694		BioReactor 1 Inf	11-9-11	1310	David Mon		X	1
95		Hg Blk BioReactor 1 Inf		+				1
96		BioReactor 2 Inf		1320				1
97		Hg Blk BioReactor 2 Inf		↓				1
98		BioReactor 2 Eff		1325				1
99		Hg Blk BioReactor 2 Eff		↓				1

Use the Bioreactor 2 Inf or EFF sample as the MS/MSD

Customer to complete appropriate columns to right

Customer to sign & date below - fill out from left to right.

1) Relinquished By: David Mon	Date/Time: 11-9-11 1550	2) Accepted By: R. Davis	Date/Time: 11/9/11 1550
3) Relinquished By: R. Davis	Date/Time: 11/10/11 1300	4) Accepted By	Date/Time
5)Relinquished By	Date/Time	6)Accepted By:	Date/Time
7)Relinquished By	Date/Time	8)Accepted By:	Date/Time
9)Seal/Locked By: R. Davis	Date/Time: 11/10/11 1300	10) Seal/Lock Opened By	Date/Time
11)Seal/Locked By	Date/Time	12)Seal/Lock Opened By	Date/Time

Comments

* Metals=As, Ag, B, Cu, Cr, Ni, Se, Zn *thomas.d.johnson@siemens.com

Customer, IMPORTANT! Please indicate desired turnaround.

[22]Requested Turnaround

14 Days ___
*7 Days ___
*48 Hr ___
*Other ___
* Add. Cost Will Apply

11-17-11